WHAT IS CLAIMED IS:

1. A force detection device comprising:

a force receiving member for receiving force to be detected;

a supporting member positioned below said force receiving member;

a first force transmitting member having an upper end thereof connected to said force receiving member and a lower end thereof connected via a connecting member, having flexibility, to said supporting member;

a second force transmitting member having an upper end thereof connected to said force receiving member and a lower end thereof connected via a connecting member, having flexibility, to said supporting member;

a first sensor for detecting force applied from said first force transmitting member to said supporting member;

a second sensor for detecting force applied from said second force transmitting member to said supporting member; and

a detection processing unit for performing a process of detecting a force or moment component acting on said force receiving member in consideration of both of a detection result of said first sensor and a detection result of said second sensor.

2. The force detection device according to Claim 1, wherein:

the first sensor has a function of detecting a state of inclination of the first force transmitting member with respect to the supporting member; and

the second sensor has a function of detecting a state of inclination of the second force transmitting member with respect to the supporting member.

3. The force detection device according to Claim 2, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first force transmitting member and the second force transmitting member is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member; and

the detection processing unit performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of said inclination degree in relation to the X-axis direction detected by the first sensor and said inclination degree in relation to the X-axis direction detected by the second sensor.

4. The force detection device according to Claim 2, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first force transmitting member and the second force transmitting member is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member; and

the detection processing unit performs a process of detecting a moment component Mz about the Z-axis of force that acts on the force receiving member based on a difference between said inclination degree in relation to the Y-axis direction detected by the first sensor and said inclination degree in relation to the Y-axis direction detected by the second sensor.

5. The force detection device according to Claim 1, wherein:

the first sensor has a function of detecting a force that is applied from the entirety of the first force transmitting member to the supporting member; and

the second sensor has a function of detecting a force that is applied from the entirety of the second force transmitting member to the supporting member.

6. The force detection device according to Claim 5, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first force transmitting member and the second force transmitting member is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member; and

the detection processing unit performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between said force in relation to the Z-axis direction detected by the first sensor and said force in relation to the Z-axis direction detected by the second sensor.

7. The force detection device according to Claim 1, wherein:

the first sensor has a function of detecting a state of inclination of the first force transmitting member with respect to the supporting member and a function of detecting a force applied from the entirety of the first force transmitting member to the supporting member; and

the second sensor has a function of detecting a state of inclination of the second force transmitting member with

respect to the supporting member and a function of detecting a force applied from the entirety of the second force transmitting member to the supporting member.

8. The force detection device according to Claim 7, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first force transmitting member and the second force transmitting member is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member; and

the detection processing unit,

performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of said inclination degree in relation to the X-axis direction detected by the first sensor and said inclination degree in relation to the X-axis direction detected by the second sensor,

performs a process of detecting a Z-axis force component Fz of force that acts on the force receiving member based on a sum of said force in relation to the Z-axis direction detected

by the first sensor and said force in relation to the Z-axis direction detected by the second sensor,

performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a sum of said inclination degree in relation to the Y-axis direction detected by the first sensor and said inclination degree in relation to the Y-axis direction detected by the second sensor, and

performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between said force in relation to the Z-axis direction detected by the first sensor and said force in relation to the Z-axis direction detected by the second sensor.

9. The force detection device according to Claim 1, further comprising:

a third force transmitting member having an upper end thereof connected to the force receiving member and a lower end thereof connected via a connecting member, having flexibility, to the supporting member;

a fourth force transmitting member having an upper end thereof connected to the force receiving member and a lower end thereof connected via a connecting member, having flexibility, to said supporting member;

a third sensor for detecting force applied from said third force transmitting member to the supporting member;

a fourth sensor for detecting force applied from said fourth force transmitting member to the supporting member; and

wherein the detection processing unit performs a process of detecting a force or moment component acting on the force receiving member in consideration of detection results of the first to fourth sensors.

10. The force detection device according to Claim 9, wherein:

the first sensor has a function of detecting a state of

inclination of the first force transmitting member with respect to the supporting member;

the second sensor has a function of detecting a state of inclination of the second force transmitting member with respect to the supporting member;

the third sensor has a function of detecting a state of inclination of the third force transmitting member with respect to the supporting member; and

the fourth sensor has a function of detecting a state of inclination of the fourth force transmitting member with respect to the supporting member.

11. The force detection device according to Claim 10, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member and an inclination degree in relation to the Y-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member and an inclination degree in relation to the Y-axis direction of the second force transmitting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member and an inclination degree in relation to the Y-axis direction of the third force transmitting member;

the fourth sensor has a function of detecting an inclination degree in relation to the X-axis direction of the fourth force transmitting member and an inclination degree in

relation to the Y-axis direction of the fourth force transmitting member; and

the detection processing unit,

performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the X-axis direction that are detected by the first to fourth sensors, and

performs a process of detecting a Y-axis force component Fy of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first to fourth sensors.

12. The force detection device according to Claim 10, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned in a first quadrant of an XY plane, the second force transmitting member being positioned in a second quadrant of the XY plane, the third force transmitting member being positioned in a third quadrant of the XY plane, and the fourth force transmitting member being positioned in a fourth quadrant of the XY plane;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member and an inclination degree in relation to the Y-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member and an inclination degree in relation to the Y-axis direction of the second force transmitting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the

third force transmitting member and an inclination degree in relation to the Y-axis direction of the third force transmitting member;

the fourth sensor has a function of detecting an inclination degree in relation to the X-axis direction of the fourth force transmitting member and an inclination degree in relation to the Y-axis direction of the fourth force transmitting member; and

the detection processing unit performs a process of determining, as a first difference, a difference between a sum of the inclination degrees in relation to the X-axis direction that are detected by the third and fourth sensors and a sum of the inclination degrees in relation to the X-axis direction that are detected by the first and second sensors, determining, as a second difference, a difference between a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first and fourth sensors and a sum of the inclination degrees in relation to the Y-axis direction that are detected by the second and third sensors, and detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a sum of said first difference and said second difference.

13. The force detection device according to Claim 10, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with a longitudinal direction of the first force transmitting member being positioned at a position of intersection with a positive part of the X-axis, a longitudinal direction of the second force transmitting member being positioned at a position of intersection with a negative part of the X-axis, a longitudinal direction of the third force transmitting member being positioned at a position of intersection with a positive part of the Y-axis, and a

longitudinal direction of the fourth force transmitting member being positioned at a position of intersection with a negative part of the Y-axis;

the first sensor has a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member;

the fourth sensor has a function of detecting an inclination degree in relation to the X-axis direction of the fourth force transmitting member; and

the detection processing unit performs a process of detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a difference between a sum of the inclination degree in relation to the Y-axis direction detected by the first sensor and the inclination degree in relation to the X-axis direction detected by the fourth sensor and a sum of the inclination degree in relation to the Y-axis direction detected by the second sensor and the inclination degree in relation to the X-axis direction detected by the third sensor.

14. The force detection device according to Claim 9, wherein:

the first sensor has a function of detecting a force that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting a force that is applied from the entirety of the third force transmitting member to the supporting member; and

the fourth sensor has a function of detecting a force that is applied from the entirety of the fourth force transmitting member to the supporting member.

15. The force detection device according to Claim 14, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned in a first quadrant of an XY plane, the second force transmitting member being positioned in a second quadrant of the XY plane, the third force transmitting member being positioned in a third quadrant of the XY plane, and the fourth force transmitting member being positioned in a fourth quadrant of the XY plane;

the first sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member;

the fourth sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the fourth force transmitting member to the supporting member; and

the detection processing unit performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between a sum of the forces in relation to the Z-axis direction that

are detected by the first and second sensors and a sum of the forces in relation to the Z-axis direction that are detected by the third and fourth sensors.

16. The force detection device according to Claim 15, wherein:

the detection processing unit furthermore performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between a sum of the forces in relation to the Z-axis direction that are detected by the first and fourth sensors and a sum of the forces in relation to the Z-axis direction that are detected by the second and third sensors.

17. The force detection device according to Claim 14, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with a longitudinal direction of the first force transmitting member being positioned at a position of intersection with a positive part of the X-axis, a longitudinal direction of the second force transmitting member being positioned at a position of intersection with a negative part of the X-axis, a longitudinal direction of the third force transmitting member being positioned at a position of intersection with a positive part of the Y-axis, and a longitudinal direction of the fourth force transmitting member being positioned at a position of intersection with a negative part of the Y-axis;

the first sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the

supporting member;

the third sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member;

the fourth sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the fourth force transmitting member to the supporting member; and

the detection processing unit performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the fourth sensor and the force in relation to the Z-axis direction detected by the third sensor.

18. The force detection device according to Claim 17, wherein:

the detection processing unit furthermore performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the first sensor and the force in relation to the Z-axis direction detected by the second sensor.

19. The force detection device according to Claim 9, wherein:

the first sensor has a function of detecting a state of inclination of the first supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a state of inclination of the second supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting a state of

inclination of the third supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the third force transmitting member to the supporting member; and

the fourth sensor has a function of detecting a state of inclination of the fourth supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the fourth force transmitting member to the supporting member.

20. The force detection device according to Claim 19, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned in a first quadrant of an XY plane, the second force transmitting member being positioned in a second quadrant of the XY plane, the third force transmitting member being positioned in a third quadrant of the XY plane, and the fourth force transmitting member being positioned in a fourth quadrant of the XY plane;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from

the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the third force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member;

the fourth sensor has a function of detecting an inclination degree in relation to the X-axis direction of the fourth force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the fourth force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the fourth force transmitting member to the supporting member; and

the detection processing unit,

performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the X-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a Y-axis force component Fy of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a Z-axis force component Fz of force that acts on the force receiving member based on a sum of the forces in relation to the Z-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between a sum of the forces in relation to the Z-axis direction that are detected by the first and second sensors and a sum of the forces in relation to the Z-axis

direction that are detected by the third and fourth sensors,

performs a process of detecting a moment component My about the Y-axis force that acts on the force receiving member based on a difference between a sum of the forces in relation to the Z-axis direction that are detected by the first and fourth sensors and a sum of the forces in relation to the Z-axis direction that are detected by the second and third sensors, and

performs a process of determining, as a first difference, a difference between a sum of the inclination degrees in relation to the X-axis direction that are detected by the third and fourth sensors and a sum of the inclination degrees in relation to the X-axis direction that are detected by the first and second sensors, determining, as a second difference, a difference between a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first and fourth sensors and a sum of the inclination degrees in relation to the Y-axis direction that are detected by the second and third sensors, and detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a sum of said first difference and said second difference.

21. The force detection device according to Claim 19, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with a longitudinal direction of the first force transmitting member being positioned at a position of intersection with a positive part of the X-axis, a longitudinal direction of the second force transmitting member being positioned at a position of intersection with a negative part of the X-axis, a longitudinal direction of the third force transmitting member being positioned at a position of intersection with a positive part of the Y-axis, and a longitudinal direction of the fourth force transmitting member

being positioned at a position of intersection with a negative part of the Y-axis;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the third force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member;

the fourth sensor has a function of detecting an inclination degree in relation to the X-axis direction of the fourth force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the fourth force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the fourth force transmitting member to the supporting member; and

the detection processing unit,

performs a process of detecting an X-axis force component

Fx of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the X-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a Y-axis force component Fy of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a Z-axis force component Fz of force that acts on the force receiving member based on a sum of the forces in relation to the Z-axis direction that are detected by the first to fourth sensors,

performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the fourth sensor and the force in relation to the Z-axis direction detected by the third sensor,

performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the first sensor and the force in relation to the Z-axis direction detected by the second sensor, and

performs a process of detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a difference between a sum of the inclination degree in relation to the Y-axis direction detected by the first sensor and the inclination degree in relation to the X-axis direction detected by the fourth sensor and a sum of the inclination degree in relation to the Y-axis direction detected by the second sensor and the inclination degree in relation to the X-axis direction detected by the third sensor.

22. The force detection device according to Claim 1, further comprising:

a third force transmitting member having an upper end thereof connected to the force receiving member and a lower end thereof connected via a connecting member, having flexibility,

to the supporting member; and

a fourth force transmitting member having an upper end thereof connected to the force receiving member and a lower end thereof connected via a connecting member, having flexibility, to the supporting member; and

having a structure wherein the force receiving member is supported with respect to the supporting member by means of the four force transmitting members.

23. The force detection device according to Claim 22, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with a longitudinal direction of the first force transmitting member being positioned at a position of intersection with a positive part of the X-axis, a longitudinal direction of the second force transmitting member being positioned at a position of intersection with a negative part of the X-axis, a longitudinal direction of the third force transmitting member being positioned at a position of intersection with a positive part of the Y-axis, and a longitudinal direction of the fourth force transmitting member being positioned at a position of intersection with a negative part of the Y-axis.

24. The force detection device according to Claim 22, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to fourth force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned in a first quadrant of an XY plane, the second force transmitting member being positioned in a second quadrant of the XY plane, the third force transmitting member being positioned in a third quadrant of the XY plane, and the

fourth force transmitting member being positioned in a fourth quadrant of the XY plane.

25. The force detection device according to Claim 1, further comprising:

a third force transmitting member having an upper end thereof connected to the force receiving member and a lower end thereof connected via a connecting member, having flexibility, to the supporting member; and

a third sensor for detecting force applied from said third force transmitting member to said supporting member; and

wherein the detection processing unit performs a process of detecting a force or a moment component acting on the force receiving member in consideration of the detection results of the first to third sensors.

26. The force detection device according to Claim 25, wherein:

the first sensor has a function of detecting a state of inclination of the first force transmitting member with respect to the supporting member;

the second sensor has a function of detecting a state of inclination of the second force transmitting member with respect to the supporting member; and

the third sensor has a function of detecting a state of inclination of the third force transmitting member with respect to the supporting member.

27. The force detection device according to Claim 26, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to third force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member and an inclination degree in

relation to the Y-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member and an inclination degree in relation to the Y-axis direction of the second force transmitting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member and an inclination degree in relation to the Y-axis direction of the third force transmitting member; and

the detection processing unit,

performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the X-axis direction that are detected by the first to third sensors, and

performs a process of detecting a Y-axis force component Fy of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first to third sensors.

28. The force detection device according to Claim 26, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to third force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned at a position at which a longitudinal direction thereof intersects with a positive part of the Y-axis, the second force transmitting member being positioned in a third quadrant of an XY plane, and the third force transmitting member being positioned in a fourth quadrant of the XY plane;

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member and an inclination degree in relation to the Y-axis direction of the second force transmitting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member and an inclination degree in relation to the Y-axis direction of the third force transmitting member; and

the detection processing unit performs a process of determining a first difference by subtracting the inclination degree in relation to the X-axis direction detected by the first sensor from a sum of the inclination degrees in relation to the X-axis direction that are detected by the second and third sensors, determining a second difference by subtracting the inclination degree in relation to the Y-axis direction detected by the second sensor from the inclination degree in relation to the Y-axis direction detected by the third sensor, and detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a sum of said first difference and said second difference.

29. The force detection device according to Claim 25, wherein:

the first sensor has a function of detecting a force that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force that is applied from the entirety of the second force transmitting member to the supporting member, and

the third sensor has a function of detecting a force that is applied from the entirety of the third force transmitting member to the supporting member.

30. The force detection device according to Claim 29, wherein:

when an XYZ three-dimensional coordinate system having

an X-axis, a Y-axis and a Z-axis is defined;

each of the first to third force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned at a position at which a longitudinal direction thereof intersects with a positive part of the Y-axis, the second force transmitting member being positioned in a third quadrant of an XY plane, and the third force transmitting member being positioned in a fourth quadrant of the XY plane;

the first sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member; and

the detection processing unit performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the first sensor and the forces in relation to the Z-axis direction that are detected by the second and third sensors.

31. The force detection device according to Claim 25, wherein:

the first sensor has a function of detecting a state of inclination of the first supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting a state of inclination of the second supporting member with respect to the

supporting member and a function of detecting a force that is applied from the entirety of the second force transmitting member to the supporting member; and

the third sensor has a function of detecting a state of inclination of the third supporting member with respect to the supporting member and a function of detecting a force that is applied from the entirety of the third force transmitting member to the supporting member.

32. The force detection device according to Claim 31, wherein:

when an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined;

each of the first to third force transmitting members is arranged from a structure having the Z-axis direction as a longitudinal direction, with the first force transmitting member being positioned at a position at which the longitudinal direction thereof intersects with a positive part of the Y-axis, the second force transmitting member being positioned in a third quadrant of an XY plane, and the third force transmitting member being positioned in a fourth quadrant of the XY plane,

the first sensor has a function of detecting an inclination degree in relation to the X-axis direction of the first force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the first force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the first force transmitting member to the supporting member;

the second sensor has a function of detecting an inclination degree in relation to the X-axis direction of the second force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the second force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the second force transmitting member to the supporting member;

the third sensor has a function of detecting an inclination degree in relation to the X-axis direction of the third force transmitting member, a function of detecting an inclination degree in relation to the Y-axis direction of the third force transmitting member, and a function of detecting a force in relation to the Z-axis direction that is applied from the entirety of the third force transmitting member to the supporting member; and

the detection processing unit,

performs a process of detecting an X-axis force component Fx of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the X-axis direction that are detected by the first to third sensors;

performs a process of detecting a Y-axis force component Fy of force that acts on the force receiving member based on a sum of the inclination degrees in relation to the Y-axis direction that are detected by the first to third sensors;

performs a process of detecting a Z-axis force component Fz of force that acts on the force receiving member based on a sum of the forces in relation to the Z-axis direction that are detected by the first to third sensors;

performs a process of detecting a moment component Mx about the X-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the first sensor and the forces in relation to the Z-axis direction that are detected by the second and third sensors;

performs a process of detecting a moment component My about the Y-axis of force that acts on the force receiving member based on a difference between the force in relation to the Z-axis direction detected by the third sensor and the force in relation to the Z-axis direction detected by the second sensor; and

performs a process of determining a first difference by subtracting the inclination degree in relation to the X-axis direction detected by the first sensor from a sum of the inclination degrees in relation to the X-axis direction that

are detected by the second and third sensors, determining a second difference by subtracting the inclination degree in relation to the Y-axis direction detected by the second sensor from the inclination degree in relation to the Y-axis direction detected by the third sensor, and detecting a moment component Mz about the Z-axis of force that acts on the receiving member based on a sum of said first difference and said second difference.

33. The force detection device according to Claim 1, wherein:

each force transmitting member is formed of a columnar member, a bottom surface of each force transmitting member is joined to a center of a diaphragm that functions as the connecting member, and each force transmitting member is connected to the supporting member by fixing a circumference of each said diaphragm to the supporting member.

34. The force detection device according to Claim 1, wherein:

each sensor has a function of detecting a force applied from a first part of the lower end of the force transmitting member and a force applied from a second part of the lower end of the force transmitting member and detects an inclination degree of the force transmitting member with respect to the supporting member based on a difference between said two forces.

35. The force detection device according Claim 1, wherein:

each sensor has a capacitance element, comprising a fixed electrode fixed to a top surface of the supporting member, and a displaceable electrode fixed to a displaceable surface displaced by a bottom of a force transmitting member, and performs force detection based on a static capacitance value of said capacitance element.

36. The force detection device according to Claim 35, wherein:

diaphragms having flexibility and conductivity are used as connecting members, each force transmitting member is

connected to the supporting member by joining the bottom of the force transmitting member to a center of a diaphragm and fixing a circumference of the diaphragm to the supporting member, and each said diaphragm is used in itself as a displaceable electrode.

37. The force detection device according to Claim 36, wherein:

each force transmitting member is formed of a columnar member, and when an xy two-dimensional coordinate system is defined with an origin being set at an intersection of a line of extension of an axial center of the force transmitting member and the top surface of the supporting member;

a first fixed electrode and a second fixed electrode are positioned at a positive part and a negative part, respectively, of an x-axis on the top surface of the supporting member, a third fixed electrode and a fourth fixed electrode are positioned at a positive part and a negative part, respectively, of a y-axis on the top surface of the supporting member;

first to fourth capacitance elements are arranged from a displaceable electrode, formed of a diaphragm, and said first to fourth fixed electrodes, an inclination degree in relation to the x-axis direction of the force transmitting member is detected based on a difference between a static capacitance value of the first capacitance element and a static capacitance value of the second capacitance element, an inclination degree in relation to the y-axis direction of the force transmitting member is detected based on a difference between a static capacitance value of the third capacitance element and a static capacitance value of the fourth capacitance element, and the detection processing unit uses detection results to perform a process of detecting a force or moment component.

38. The force detection device according to Claim 37, wherein:

a fifth fixed electrode is furthermore positioned near the origin on the top surface of the supporting member, a fifth capacitance element is arranged from a displaceable electrode

formed of the diaphragm and said fifth fixed electrode, a force applied to the supporting member from the entirety of the force transmitting member is detected based on a static capacitance value of said fifth capacitance element, and the detection processing unit uses a detection result to perform a process of detecting a force or moment component.

39. The force detection device according to Claim 36, further comprising:

an auxiliary base plate having openings for passing through the force transmitting members and being fixed to the supporting member so as to be positioned above the diaphragms; and

wherein each sensor has an auxiliary capacitance element, comprising a fixed electrode fixed to a bottom surface of said auxiliary base plate and a displaceable electrode formed of the diaphragm in itself, and performs force detection using a static capacitance value of said auxiliary capacitance element.

40. The force detection device according to Claim 39, wherein:

a part or all of the fixed electrodes fixed onto the bottom surface of the auxiliary base plate are in mirror image relationships with a part or all of the fixed electrodes fixed onto the top surface of the supporting member.

41. The force detection device according Claim 35, wherein:

the detection processing unit is arranged from wirings that electrically connect a plurality of capacitance elements.

42. The force detection device according Claim 1, wherein:

the upper end of each force transmitting member is connected to the force receiving member via a connecting member having flexibility.

43. The force detection device according to Claim 42, wherein:

the force receiving member is arranged from a plate-like

member, each force transmitting member is arranged from a columnar member, and the connecting members, for connecting the force receiving member with the respective force transmitting members, are arranged from thin parts of the plate-like force receiving member.

44. The force detection device according to Claim 42, further comprising:

auxiliary sensors for detecting forces applied from the respective force transmitting members to the force receiving member; and

the detection processing unit performs a process of detecting a force or moment component acting on said force receiving member by further taking into consideration detection results of said auxiliary sensors.

45. The force detection device according to Claim 44:

said device having a structure, wherein the sensors for detecting forces applied from the force transmitting members to the supporting member, and the auxiliary sensors for detecting forces applied from the force transmitting members to the force receiving member, are put in mirror image relationships; and

wherein the detection processing unit performs a process in consideration of said mirror image relationships.

46. The force detection device according to Claim 44, wherein:

each force transmitting member is formed of a columnar member and each force transmitting member is connected to the force receiving member by joining a top surface of the force transmitting member to a center of a diaphragm functioning as a connecting member, and fixing a circumference of said diaphragm to the force receiving member.

47. The force detection device according Claim 1, wherein:

restricting members are provided for restricting

displacements of the force receiving member with respect to the supporting member within predetermined ranges.